Record of Decision
National Aeronautics and Space Administration

Final Environmental Impact Statement for the International Space Research Park at the John F. Kennedy Space Center, Florida

A. Background

The International Space Research Park (ISRP) is intended to support NASA's mission, facilitate public-private collaboration, provide for complementary R&D objectives, and further space commercialization and development, consistent with the Space Act of 1958, as amended to authorize Enhanced Use Leasing (EUL). The mission of the Florida Space Authority (FSA) is to retain, expand, and diversify the State's space-related industries. As a center for R&D, the ISRP would bring together a dynamic mix of industry, academia, and government researchers to focus their combined strengths in areas of R&D critical to the long-term success of NASA and its partners, including, but not limited to, the FSA.

NASA KSC often collaborates with others in funding and implementing projects consistent with NASA's mission and the Space Act. Collaborators who would need to be located on KSC at the ISRP would be those whose activities require proximity to the launch and payload-processing infrastructure of KSC. Of these, non-governmental collaborators would need greater access and operational flexibility than is currently available at KSC. NASA has, therefore, determined a need to develop a site within KSC but outside the security fence that will provide the desired proximity and flexible operating environment. The proposed action would be to lease approximately 142 ha (360 ac) in phases to the State of Florida (through

the FSA), which would create an ISRPA (International Space Research park Authority) to develop and manage the site as the ISRP. The lease period is proposed to be 50 years, after which NASA may extend the lease for a period of 25 years. When the lease expires or is terminated, the ISRPA would demolish the buildings and supporting infrastructure and return the land unless reuse is negotiated.

B. Introduction to the Environmental Impact Statement (EIS)

Public involvement is a key element in the NEPA process. NASA initiated public involvement when it issued the October 8, 2002 Notice of Intent to prepare an EIS and conduct scoping meetings for the proposed action. There was a 45-day scoping period (October 8, 2002 through December 9, 2002). All responses received from interested parties in response to the Notice of Intent are presented in Appendix A of the Draft EIS (DEIS).

The Notice of Availability of the DEIS was published January 27, 2004. Copies of the DEIS were sent to over 180 recipients. This included numerous public agencies and private organizations and individuals. A list of agencies consulted can be found in the FEIS, Appendix A. There were 15 commentors on the DEIS. Their comments and the relevant responses are provided in Appendix M of the Final EIS (FEIS). All responses indicated that Alternative 1 was the most acceptable alternative. One home owners association continued to raise concerns regarding the increase in traffic on Merritt Island, Florida even in light of the results of the traffic study performed to address this issue. No other major issues were raised.

C. Alternatives Considered

Study Area: All proposed sites for the ISRP are located within KSC. Kennedy Space Center occupies 56,500 ha (139,490 ac) of land located within Brevard and Volusia Counties and controlled by NASA. The study area includes KSC, Brevard County, and the five adjoining counties (Indian River, Orange, Osceola, Seminole, and Volusia). The alternative development sites proposed for the ISRP are located along the south portion of Kennedy Parkway South (also known as State Road 3). Kennedy Parkway South is the major north-south transportation arterial that allows public ingress and egress through KSC into Merritt Island and Titusville.

Project Alternatives: NASA evaluated the potential environmental impacts of three alternatives (Alternative 1, Alternative 2, and the No Action Alternative). The first two alternative actions involve developing and operating the ISRP at alternate locations on KSC and the associated environmental impacts of each option. The No Action Alternative was analyzed for the potential environmental consequences that may result if the proposed action is rejected (or not recommended) and present management of the study area continues.

Alternative 1 (Preferred Alternative): In Alternative 1, NASA proposes to develop the ISRP on approximately 142 ha (360 ac) of KSC property to the west of Kennedy Parkway South (State Road 3). Development and related construction activities would occur on land located immediately south of the KSC Visitors Complex along Space Commerce Way. Approximately 128 ha (316 ac) of the development (Phases A-E) would occur on the west side of Space Commerce Way. Phase F would occur on a 10 ha (24 ac) parcel east of Space Commerce Way,

adjacent to and west of the Space Life Sciences Lab (SLSL). The larger area (Phases A-E) considered in Alternative 1 is dominated by citrus groves and includes remnant wetlands and disturbed habitats. The smaller area (Phase F) is undeveloped.

In Alternative 1, development would occur in 6 phases (Phases A-F) over 25 parcels, which would be serviced by approximately 4.5 kilometers (km) (2.8 miles (mi)) of roads. The parcels range from 1.8 to 10.2 ha (4.5 to 25.3 ac) in size with developable acreage between 1.8 and 6.2 ha (4.5 and 15.4 ac). Some parcels have dedicated no-build zones due to existing wetlands and stormwater ponds. The stormwater ponds would become part of the master stormwater system for the park. The proposed stormwater management system includes several connected treatment ponds for the collection and treatment of runoff generated from the developed parcels. Parcels would be developed to include 35 percent open space overall. The open space would include a central greenway.

Alternative 2: Alternative 2 proposes construction and development of the ISRP in six phases on approximately 130 ha (321 ac) located northeast of the KSC south security gate (Gate #3) on Kennedy Parkway South (State Road 3), near B Avenue SW (or Tel-4 Road). This alternative, like Alternative 1, also considered Phase F development of 10 ha (24 ac) east of Space Commerce Way, adjacent to and west of the SLSL. The combined areas considered in Alternative 2 are undeveloped and characterized by high quality pine flatwoods and scrub habitat embedded with wetlands.

The area considered in Alternative 2 (including Phase F) is defined by 26 parcels, which would be serviced by approximately 4.2 (km) (2.6 (mi)) of roads. Of the 26 parcels, 25 parcels are proposed for development. These parcels range in size from 1.6 to 10.0 ha (4.0 to 24.0 ac) with developable acreage from 1.5 to 5.6 ha (3.7 to 13.8 ac). A 34.7 ha (85.7 ac) parcel has been established under this development plan to protect an extensive wetlands system. Four stormwater management ponds are proposed for the collection and treatment of runoff generated from the developed parcels. The Alternative 2 land use plan offers extensive greenways and sidewalks for pedestrian access along the wetland conservation area and between parcels.

Alternative 3 (No Action Alternative): Under the No Action Alternative, no new development would be proposed regarding the ISRP on KSC. This No Action Alterative would result in continuing the present management of the two proposed sites at KSC. Under the No Action Alternative, land currently managed by the USFWS would remain under USFWS management. Land leased through 2008 to the Kerr Foundation for citrus grove production would, after the lease expires, become part of the undeveloped KSC buffer, which is managed by the U.S. Fish and Wildlife Service (USFWS) as part of the Merritt Island National Wildlife Refuge. The USFWS has long-term plans to restore the citrus groves to natural conditions.

The No-Action alternative would consist of not implementing this proposal in any way and thereby not developing a research park on government lands.

Alternatives not considered in detail included sites on the Cape Canaveral Air Force Station (CCAFS) since no sites at CCAFS met the purpose and need of the proposed action. NASA did not consider sites on KSC inside the security zone as those options would not provide 24-hour unsecured access to the ISRP tenants. NASA and FSA reviewed existing research and commercial business parks, but none met the purpose and need for proximity, and thus, were considered infeasible.

D. Key Environmental Issues Evaluated

The primary concerns raised in public comments relate to traffic, socio-economics, housing, security, air quality, wetlands, and wildlife. These concerns were addressed in the DEIS. Impacts to soils from construction were indicated and thus were also analyzed.

E. Environmental Consequences

Traffic: The results of modeling studies of traffic, especially on north Merritt Island, showed that the implementation of either of Alternative 1 or Alternative 2 would not result in significant degradation to traffic patterns or flows. Even at full build out of the ISRP, traffic would not be significantly degraded either on KSC or within Brevard County. To maintain acceptable levels of service after 2022 and with the existing roadway geometry, adjustments to traffic signal timing and other traffic management measure may be needed. Before such changes would be implemented, further environmental review would be conducted.

Socio-economics: The implementation of either Alternative 1 or Alternative 2 would draw major economic resources to the area, which would be positive and not

adversely impact the growing regional economy.

Housing: The expected increase in demand for housing if the ISRP is implemented is consistent with planning within Brevard County and surrounding counties and is not expected to have a significant impact on the housing supply.

Security: The security issues raised during scoping have been addressed. NASA has constructed two new entrance gates, one on Kennedy Parkway and another on NASA Causeway respectively, to allow for 24-hour access through the Center via the new Space Commerce Way. These measures also allow the proposed ISRP, under both Alternatives 1 and 2, to be located outside of the secure areas of KSC.

Air Quality: Air quality would be impacted within the surrounding local area by construction and controlled burning activities and at KSC by increased traffic and associated emissions especially of carbon monoxide (CO). The potential emissions for unconfined particulate matter in general come from, but are not restricted to, vehicular movement, transportation of materials, demolition, modification and construction projects within KSC. NASA will require the FSA to implement dust suppression methods to reduce the PM and PM10 emissions below to well below the significance level of 5 tons per year, resulting in a negligible air quality impact.

Controlled burns at KSC and MINWR are regulated under Chapter 62-256, FAC, by the Florida Department of Environmental Protection and the Florida Department of Forestry. Controlled burns where air curtain incinerators are properly used would have minimal impacts. Chapter 62-256 FAC authorizes only air curtain incinerators to be used in controlled burns of ground cover and construction debris. NASA will require the FSA and its tenants to comply with

controlled burning regulations and permit terms and conditions.

Vehicular traffic is expected to increase; however, the levels are not expected to be greater than those recorded during the 1970's in the vicinity of KSC at the height of the Apollo Program. In addition, the vehicles today are more efficient and have better emission controls. However, the increase in traffic could be expected to produce a significant impact to local air quality at KSC. This traffic would not have a significant negative impact on air quality outside KSC in Brevard County and the remaining study region. Because the potential significant decrease in air quality is estimated to be local to KSC and no justification or need currently exists to develop a regional mass transport systems plan, the ISRPA would encourage the use of the Brevard County sponsored commuter van pool systems and other public transportation systems such as Space Coast Area Transit System (SCATS). As a part of the NASA and the FSA educational outreach activities, NASA would provide educational information on the value of reducing traffic and improving air quality within KSC. There are no other direct mitigating actions that could be performed by NASA or FSA.

Wetlands and Hydrology: Construction and operation of the ISRP may alter surface water quality or hydrological processes, including impacts to Class II and III Waters, and surface water flows. Surface water quality, hydrological processes, and surface water flows are regulated by the Florida Water Resources Act 1972 (Part IV of Chapter 373, F.S. and Chapter 62-40, Florida Administrative Code (F.A.C.)), Section 404 of the Clean Water Act, and NASA regulations at 14 CFR subpart 1216.2, implementing Executive Orders 11988, Floodplains, and Executive

Order 11990, Protection of Wetlands. A Wetland Mitigation Plan would be required to address impacts related to wetland systems and stormwater flow within the alternative sites. The ISRPA or NASA as the landowner would obtain a Florida Environmental Resources Permit prior to any construction on the selected ISRP site, which would address issues of water quality, general hydrology, and surface water flow. Water quality monitoring may also be required to mitigate impacts. Low-impact Best Management Practices (BMP) and a Stormwater Management System would be implemented in the design, development, and operation of the ISRP.

Construction runoff into preserved wetlands could cause indirect impacts to water quality. To minimize disturbances to wetlands from construction-related runoff, construction would be avoided within the 7.6 m (25 ft) upland buffer extending from the delineated edge of preserved wetlands toward the upland. Standard BMPs would be implemented to minimize runoff into these protected areas. Dewatering into the sensitive hammock wetlands and swale marshes would be prohibited.

Wildlife: The cumulative effects of habitat fragmentation due to habitat loss from development, introduction of new roads, and increased human presence in either Alternative 1 or Alternative 2 could cause mortality or substantial harassment of individual eastern indigo snakes (Drymarchon corais couperi.), a species listed as threatened by the USFWS under the ESA, and thus be significant, unless mitigated. The USFWS has issued a Biological Opinion for Alternative 1, which is included in the appendixes to the DEIS. The Biological Opinion covers the eastern indigo

snake, the only federally listed species that may be adversely affected by Alternative 1, the preferred alternative. The indirect effects of habitat fragmentation, increased traffic on multiple roads, and increased human presence potentially resulting from implementation of the ISRP under Alternative 1 were determined in the Biological Assessment and Biological Opinion as "likely to adversely affect" the eastern indigo snake. The potential for the proposed action to result in incidental take of the indigo snake in the form of harm was considered significant. The USFWS Biological Opinion approved incidental take of all individuals. Further, the Biological Opinion indicates No Jeopardy to the continued existence of the eastern indigo snake or adverse modification to critical habitat would occur if the recommended reasonable and prudent measures are taken to minimize the level of take of individuals of this species. NASA would require the FSA to implement these reasonable and prudent measures.

The impact of habitat fragmentation and roads under Alternative 1 on Federal and State-listed threatened or endangered wading birds and the southeastern American kestrel (Falco sparverius paulus) would not be considered significant since the disturbed or artificial habitats being used are locally abundant and these species have a high opportunity to disperse.

If Alternative 2 were selected, several Federal and State-listed threatened or endangered species would be significantly impacted. Both the Florida scrub-jay (Aphelocoma coerulescens) and the eastern indigo snake are federally listed threatened species. Direct and indirect effects would occur to individuals within these species due to development of the site under Alternative 2 and consequent

loss of critical Florida scrub-jay and eastern indigo snake habitat, and habitat displacement and consequent increased risk of predation and vehicular collisions.

NASA has not sought a Biological Opinion from the USFWS for Alternative 2. If NASA selected Alternative 2, development could not proceed without obtaining a Biological Opinion from the USFWS for the eastern indigo snake, the Florida scrub jay, and other federally listed threatened or endangered species, indicating no jeopardy to the species and no adverse modification of critical habitat, subject to limits on incidental take and implementation of recommended reasonable and prudent measures. The eastern indigo snake is also protected under Florida law.

The Biological Assessment determined that implementation of the proposed ISRP action on the Alternative 2 site would cause the direct loss of 73.4 ha (181.4 ac) of occupied Florida scrub-jay habitat resulting in incidental take, in the form of harm, of a minimum of eight Florida scrub-jay territories. Based on the long-term research of this local population the majority of the territories that would be impacted under this alternative are likely sources to the local KSC scrub-jay population. The Tel-4 Road (B Avenue SW) population is the only population on KSC that is not in decline and is known to be increasing. The proposed ISRP development on the Alternative 2 site would have the potential to jeopardize core recovery efforts of this species at KSC. Development would not proceed on Alternative 2 without preparation of a new Biological Assessment, formal consultation with the USFWS, and procurement of a Biological Opinion, including a finding of "No Jeopardy" and an Incidental Take Statement for this species.

Implementation of Alternative 2 would also have the potential to affect 125 to 206 gopher tortoises (Gopherus polyphemus), their habitat, and several commensals (species that benefit from co-existence with gopher tortoises, such as the Florida gopher frog (Rana capito aesopus), and the Florida mouse (Podomys floridanus). The gopher tortoise and other commensal species are protected under Florida State law. The direct and indirect effects of the loss or displacement of critical gopher tortoise habitat, destruction of occupied burrows, increased predation, and increased risk of vehicular collision could cause individual mortality of gopher tortoises and listed commensals.

Development could not proceed under Alternative 2 until a permit is secured pursuant to the requirements of Rules 68A-25.002 and 68A-27.005, F.A.C. authorizing the incidental take or relocation of gopher tortoises, including any encountered State-listed commensals.

Alternative 2 also has the potential, due to disturbance of soils and surface vegetation, to impact local and globally rare freshwater swale marshes, which harbor threatened populations of such species as Curtiss reedgrass (Calamovilfa curtissii (Vasey) Scribn.), a federally and State-listed threatened plant.

The potential for the identified cumulative projects combined with the significant direct and indirect effects of the ISRP under Alternative 2 would result in highly significant impacts. This finding considers the critical importance of the biological resources existing on and surrounding this site. The ability to provide adequate compensation for potential cumulative impacts would be of concern,

particularly for impacts on the regionally important Tel-4 Road (B Avenue SW) Florida Scrub-jay population and the local and globally rare freshwater swale marshes, and associated species such as Curtiss reedgrass.

Lighting along roads and around and within buildings within newly developed areas of Alternative 2 (Phases A-E) would have the potential to impact the federally listed bald eagle (Haliaeetus leucocephalus) by disrupting movement and breeding behaviors. A monitoring program, conducted in accordance with Bald Eagle Monitoring Guidelines (USFWS 2002), for any development activities occurring within 1 km (0.6 mi) of a bald eagle nest tree would be implemented to determine the eagle's response to these potential impacts. If significant changes in behavior were identified, then mitigation actions would be employed. For example, construction would be prohibited during the nesting season or nighttime lighting would be reduced to levels tolerated by the species.

Cumulative impacts of habitat fragmentation from habitat loss and introduction of new roads and increased human presence under Alternative 2 could cause the mortality or substantial harassment of numerous individual indigo snakes. Over time, this impact could negatively influence population viability. To reduce the adverse effects of this cumulative impact NASA would: 1) implement an education program aimed at informing employees about the indigo's protected status and consequences of violating these laws, its high susceptibility to road mortality, its beneficial roles, and its generally gentle disposition towards humans (Breininger et al. 1994); 2) have its partner, the FSA, where practicable, design new roads and

retrofit, existing roads to provide underpasses for movement between habitats; and 3) also have its partner, the FSA, establish a monitoring program that would evaluate the effectiveness of the underpasses and address needed demographic data gaps to enable future establishment of sound conservation strategies. The second action presented would be expected to benefit other important wide-ranging wildlife. Soils: Construction of the proposed ISRP would change the soil composition, structure, and function only within the proposed ISRP site under Alternatives 1 and 2. Construction impacts to on-site soils are considered unavoidable since on-site soils would need to be moved and augmented to raise finish floor elevations of facilities to be constructed. Therefore, no mitigation measures are proposed for reducing impacts to on-site soils. No impacts to soils are expected to occur off site. Operation of the ISRP would not impact soils either on or off-site.

Under the No Action Alternative, no adverse impacts would result. The activities associated with the development and operation of the proposed ISRP would not occur, therefore, no additional activities would occur to produce such impacts or contribute to cumulative impacts. Alternative 1(after the citrus grove leases expire) and Alternative 2 sites would continue to be part of the undeveloped buffer area at KSC and as such be managed by the USFWS as part of the Merritt Island National Wildlife Refuge.

F. Mitigation

Dust suppression measures would be required to reduce air quality impacts under Alternatives 1 and 2. The following are examples of reasonable precautions to be undertaken to control unconfined emissions of particulate matter: restricted speed limit on unpaved roads to prevent excess emission of particulate matter, application of water as needed during construction activities to control excessive airborne particulate matter, providing enclosure or canopy covering for material stockpiling and transportation whenever possible and practical, and confine or enclose, whenever practical, those activities which may cause airborne particulate matter. Air curtain incinerators would be required to reduce air quality impacts from controlled burning of land clearing debris.

Voluntary use of alternative vehicles, car pooling, public transportation and other traffic management measures would be encouraged to reduce air pollution and other traffic-related impacts. For example, as a part of the NASA and the FSA educational outreach activities, NASA would provide educational information on the value of reducing traffic and improving air quality within KSC. These activities may, for example, be part of the KSC Environmental Awareness Week. Traffic management issues would be resolved in cooperation with local officials. Further environmental review would be conducted as required.

A Wetland Mitigation Plan would likely be required to address impacts related to wetland systems in Alternatives 1 and 2. The Environmental Resources Permit addresses issues of water quality and general hydrology. Water quality monitoring may also be required as mitigation to the proposed impacts. The functions and

values of the 5.06 ha (12.5 ac) of wetlands proposed to be developed under the Alternative 1 (Phases A-F) plan were assessed to be low; therefore the corresponding mitigation requirements would be expected to be low. A wetland mitigation plan would be developed and would include:

- Creation of a 2 ha (5 ac) freshwater wetland adjoining an existing 1.6 ha (4 ac) wetland, and
- Enhancement, via removal of exotic plants, of approximately 18 ha (45 ac) of important hardwood hammock habitat on the Alternative 1 (Phases A-E) site.

This level of wetland mitigation is predicted to sufficiently offset potential impacts resulting from proposed wetland development.

To minimize disturbances to wetlands from this construction-related impact, construction would be avoided within the 7.6 m (25 ft) upland buffer extending from the delineated edge of preserved wetlands toward the upland. Standard BMP would be implemented to minimize runoff into these protected areas. Dewatering into the sensitive hammock wetlands and swale marshes would be prohibited.

To minimize the potential for injury or death of eastern indigo snakes over time NASA would: 1) implement an education program to informing employees about the eastern indigo's protected status and consequences of violating these laws, its high susceptibility to road mortality, its beneficial roles, and its general gentle disposition towards humans (Breininger et al. 1994), 2) have its partner, the FSA where practicable, design new roads and retrofit existing roads to provide underpasses for movement between habitats (this action would also be expected to benefit other important wide-ranging wildlife), 3) have its partner, the FSA,

establish a monitoring program to evaluate the effectiveness of the underpasses and address needed demographic data gaps to enable future establishment of sound conservation strategies. NASA and its partners would also implement the USFWS guidelines "Standard Protection Measures for the Eastern Indigo Snake". These guidelines are directed at educating construction personnel of the protected status of this species and providing clear instructions that reduce the likelihood for intentional or accidental injury, harm, harassment, or killing of this species.

G. Unavoidable Impacts

Based on the results of the studies conducted, only two areas of impact would be significant for either proposed ISRP site while an additional issue would be raised for the Alternative 2 site. The first two issues were air quality and soils degradation. Unavoidable impacts to air quality are related primarily to the increase in traffic. These impacts, largely from mobile sources, would be unavoidable. While pollution levels would increase for particulates and carbon monoxide, emissions would not be expected to degrade the local air quality such that the area would no longer be in attainment with air quality standards.

Unavoidable impacts to soils are related solely to the fact that construction activities would change the character of the soils on the construction sites. These impacts are unavoidable. No impacts would be expected off site.

Unavoidable impacts to wildlife are primarily associated with the destruction of high quality scrub and wetlands habitat found on the Alternative 2 site.

Construction activities would destroy most of these resources and result in impacts to several protected species.

H. Choice of Alternatives

The No Action Alternative would not fulfill the need to further public-private space-related R&D in close proximity to unique facilities at KSC. Alternative 1, which is the environmentally preferred and the preferred alternative, meets the needs of the proposed projects in regards to access and configuration. It also meets most closely the intent of KSC planning goals. Further, Alternative 1 contains citrus groves that are nearing the end of their useful life. In 2008 the citrus groves will be abandoned and the Fish and Wildlife Service would be faced with rehabilitating this site for use as part of the MINWR. In comparison, the Alternative 2 site contains significant and high quality habitat, for several threatened species. Mitigation of the impacts to habitat and wildlife would be very difficult and potentially cost-prohibitive.

I. Decision

The decision of NASA is to enter into an agreement with the State of Florida through the Florida Space Authority (FSA) to lease up to 146 hectares (360 acres) of land on the John F. Kennedy Space Center, Florida for the sole intent of the development of an International Space Research Park as described in the FEIS under Alternative 1 and including the associated mitigation measures. The lease agreement will convey the land to FSA in a series of phases in a process to be detailed in the lease agreement. The length of the agreement will be up to 50 years

with the possibility of a 25-year extension.

Alternative 1 was chosen as the most cost effective manner in which to develop additional technical infrastructure and capability for the further commercialization of space-related activities.

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